

From: Tom Yourk To: Urszula M. Cegielnik

Date: 2/4/2005 Time: 12:22:50 PM

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## **FACSIMILE COVER PAGE**

**FEB 04 2005**

**To :** Urszula M. Cegielnik

**From :** Tom Yourk

**Sent :** 2/4/2005 at 12:22:48 PM

**Pages :** 2 (including Cover)

**Subject** Revised claims app 10/707,174 one of 4 pages

Revised claims 1,3,4,5. on 3 pages

Also Fleischmann Patents 4,919,637 and 4,826,465 expired so I revised claims to delete reference to Fleischmann.

Tom Yourk

application 10/707,174

## What is Claimed is:

[c1] ~~A method of propelling a model submarine using bilge pumps and exacting buoyancy to allow a completely functional model without any external moving parts. This is accomplished with fixed directional water jet nozzles providing thrust powered by bilge pumps acting as miniature turbine units. Directional nozzles in the front of the sub are used for turning, reverse, and submerging. Water jet nozzles in the rear of the sub provide forward thrust. Surfacing is accomplished by terminating forward thrust either by design or through loss of signal.~~

A method of propelling a model submarine using bilge pumps and exacting buoyancy to allow a completely functional model without any external moving parts; this is accomplished with fixed directional water jet nozzles providing thrust powered by bilge pumps acting as miniature turbine units, directional nozzles in the front of the sub are used for turning, reverse, and submerging, water jet nozzles in the rear of the sub provide forward thrust, surfacing is accomplished by terminating forward thrust either by design or through loss of signal.

[c2] A method according to claim 1 which can be applied to model submarine's varying in length from 4ft to 7 ft. (or some other reasonable length) based on 4 ft. and 7 ft. prototypes.

[c3] The proposed control/propulsion system is significantly different from Fleischman (4,919,637) in that he uses only one pump (not specified as a bilge pump) to actuate hydraulically activated bellows servos which provide movement through rods and levers to actuate externally moving dive planes and rudder. The system proposed herein uses individual bilge pumps for directional control including submerging. The Fleischman system is very complex with many intricate parts including the ballast system, solenoid control valves, and diaphragm actuators. These parts are functionally no different than servos used in a typical radio control systems to move, in submarines, dive planes and the rudder, in airplanes the ailerons and rudder etc. the only difference being that the Fleischman servos are hydraulically activated instead of electrically activated as are typical RC servos. Whereas the proposed control/propulsion system is very simple by comparison. Figures 1 through 5 show the complete system, components of which are a sealed battery, to supply power, a watertight chamber made of PVC pipe or any other suitable material in which a radio receiver, solid-state electrical switches and automotive type relays are located. The watertight chamber merely serves to keep the electrical components dry and the electrical components merely distribute power (through wires exiting the watertight chamber) to the various bilge pumps to provide thrust and control direction. The other components are the bilge pumps themselves, plumbing consisting of PVC pipe and brass nozzles and the various wires to supply power to the bilge pumps. The main components are thus simply, the battery, the watertight chamber, and the bilge pumps.